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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,506	02/07/2002	Joichi Ushioda	33082M120	7344

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/31/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/067,506

Applicant(s)

USHIODA ET AL.

Examiner

Ram N Kackar

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-23 and 25-28 is/are rejected.
- 7) ☒ Claim(s) 24 and 29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-9, drawn to a method, classified in class 427, subclass 446.
 - II. Claims 10-29 drawn to an apparatus, classified in class 156, subclass 345.51.
2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used with other kind of process to coat protrusions and thermal spraying could be done on substrate holder for deposition or heat-treating apparatus.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Michael Makuch on 5/14/03 a provisional election was made with traverse to prosecute the invention of Group II, claims 10-29. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-9 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

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application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 10-13 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Grimard et al (US 5903428).

Grimard et al disclose a processing vessel having gas supply (Fig 4-410), exhaust means (416) conductor base (Fig 1-104) with dielectric film to make it an electrostatic chuck (102) where the dielectric film has protrusions of ceramic (Col 4 lines 1-3) which are curved at the top (106) and have a height of 5-350 microns (Col 4 lines 15-17).

Reference to thermal –spraying is a process for making the product and carries no weight in an apparatus claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 14-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimard et al (US 5903428) in view of Shamouilian et al (US 6320736).

Grimard et al disclose a processing vessel having gas supply (Fig 4-410), exhaust means (416) conductor base (Fig 1-104) with dielectric film to make it an electrostatic chuck (102) where the dielectric film has protrusions of ceramic (Col 4 lines 1-3) which are curved at the top (106) and have a height of 5-350 microns (Col 4 lines 15-17).

Grimard et al do not disclose a base under the electrostatic chuck.

Shamouilian et al also disclose a processing vessel having gas supply (Fig 1-10a), exhaust means (14) conductor layer (28) with dielectric film to make it an electrostatic chuck (30) on a base (36) where the dielectric film has protrusions of ceramic (44,32).

Therefore it would have been obvious to have a base for the ESC of Grimard so as to be able to provide cooling for the chuck (Col 4 lines 1-3).

5. Claims 20, 22, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitabayashi et al (US 5530616) in view of Yukihiro Kamide (US 5306379).

Kitabayashi et al disclose a reduced pressure plasma-processing atmosphere (Col 1 lines 10-14) an electrostatic chuck (Col 1 lines 14-15) with base, conductor and dielectric film (Fig 1) having protrusions (5) and heat transfer fluid (6). As Kitabayashi et al disclose a reduced pressure plasma-processing atmosphere at least for etching (Col 1 lines 10-14) it would be obvious for it to have gas supply and exhaust means.

Kitabayashi et al do not disclose rectangular base.

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Yukihiro Kamide discloses a plasma processing apparatus with rectangular base for rectangular substrates.

Therefore it would have been obvious for one of ordinary skill in the art to have a rectangular base for Kitabayashi so as to be able to process rectangular substrates.

Regarding pattern of protrusions, Kitabayashi et al teach that protrusions may be arranged in many different patterns (Col 4 lines 14-15).

Therefore it would have been obvious to optimize protrusions patterns at an angle so as to make temperature and processing uniformity across the wafer.

6. Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitabayashi et al (US 5530616) in view of Yukihiro Kamide (US 5306379) as applied to claims 20, 22, 25 and 27 and further in view of Grimard et al (US 5903428).

Kitabayashi et al disclose protrusions but do not disclose them to have shape point contact.

Grimard et al disclose protrusions with small area (Fig 5-502).

Therefore it would have been obvious for one of ordinary skill in the art to have a protrusion of small area at top so as to help in providing low restriction for cooling gas, low contamination and ease of dechucking after the completion of the process.

7. Claims 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitabayashi et al (US 5530616) in view of Yukihiro Kamide (US 5306379) as applied to claims 20, 22, 25 and 27 and further in view of Shamouilian et al (US 6320736).

Kitabayashi et al disclose protrusions and stepped up portion at the periphery but do not disclose protrusions to be of lesser height than the stepped up portion.

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Shamouilian et al disclose protrusions to be of lesser height than the stepped up portion at the periphery (Fig 1-44).

Having the height of the stepped portion a little higher would be obvious in ensuring that the cooling gas does not leak out. In trying to make the stepped portion of the same height there may be a possibility that the stepped portion may not seal perfectly because of slight manufacturing tolerance in the height of the protrusions.

Allowable Subject Matter

8. Claims 24 and 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These claims recite a groove in the stepped portion having an outlet, which is in communication with the region inside of the stepped portion. The closed prior art cited above do not fairly disclose or suggest this limitation.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5810933, 5531835, 5946183, 6028762 and JP60-261377 all disclose electrostatic chucks with protrusions and gas for cooling.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK
July 26, 2003

*primary Examiner
AU 1763
P. Happonen*